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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/718,851	11/22/2000	Steve J. Shattil	CIDIV001	3170

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EXAMINER	
MEW, KEVIN D	

ART UNIT	PAPER NUMBER
2664	

DATE MAILED: 08/03/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

AK

Office Action Summary	Application No.	Applicant(s)	
	09/718,851	SHATTIL	
	Examiner	Art Unit	
	Kevin Mew	2664	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *20 January 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-17* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-17* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

Detailed Action

1. Applicant's Remarks/Arguments filed on 1/20/1005 regarding claims 1-17 have been considered and claims 1-17 are currently pending.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. **Claims 1-17** are rejected under 35 U.S.C. 102(b) as being anticipated by the admitted prior art, Fukasawa et al. (USP 5,533,012).

Regarding claim 1, Fukasawa discloses in a carrier interferometry (CI) communications system, a method for communicating comprising:

providing for modulation of at least one data symbol (spread signal $dk_I(t)$, $dk_Q(t)$) onto a plurality of carrier signals (spread signal $dk_I(t)$is modulated with in-phase carrier and spread signal $dk_Q(t)$is modulated with quadrature carrier, see col. 6, lines 31-67), the carrier signals having different values of at least one diversity parameter (in-phase carrier signal and quadrature carrier signal are orthogonal to each other, see col. 6, lines 31-67),

providing for coupling the modulated carrier signals into at least one communication channel (a combiner combines the modulated carrier signals to create a transmit signal, see col. 6, lines 38-52) from at least one transmitter element (transmit processor 101, see col. 6, lines 38-52),

providing for reception of the coupled carrier signals via at least one receiver element (spreading demodulator performs the reverse function by extracting the symbols transmitted from a received signal, see col. 5, lines 49-62),

providing for spatial processing (shift register processing of the interference canceler, see col. 11, lines 1-67) of the received signals (the spreading demodulator supplies a baseband signal to a interference canceler, see col. 8, lines 61-67 and col. 9, lines 1-2) with respect to at least one diversity parameter space (with respect to location of the shift registers, see col. 9, lines 20-67) to separate at least one desired data symbol from at least one interfering signal (interference cancellation results in eliminating interference from a desired symbol, see col. 11, lines 1-67).

Regarding claim 2, Fukasawa discloses the CI communication method recited in claim 1 wherein the step of providing for modulation includes providing for weighting of the carrier signals (in-phase carrier signal and quadrature carrier signal are spread by different spread signals, see col. 6, lines 31-67) to generate a predetermined superposition signal (the result of the modulates carrier signals are combined in the combiner, see col. 6, lines 31-67).

Regarding claim 3, Fukasawa discloses the CI communication method recited in claim 1 wherein the steps of providing for modulation and providing for reception comprise at least one of a set of transmission protocols including time-division multiple access, code-division multiple access (CDMA), frequency-division multiple access, time-offset multiplexing, frequency-hopping spread spectrum, orthogonal frequency division multiplexing (OFDM), multi-tone

CDMA, multi-carrier CDMA, OFDM-CDMA, synchronized CDMA, and phase-division multiplexing (CDMA, see col. 3, lines 26-67).

Regarding claim 4, Fukasawa discloses the CI communication method recited in claim 1 wherein the step of providing for spatial processing (shift register processing) includes providing for multi-channel detection (shift register processing includes detecting different signals transmitted by different mobile stations, see col. 9, lines 20-67).

Regarding claim 5, Fukasawa discloses the CI communication method recited in claim 1 wherein the step of providing for spatial processing includes providing for at least one superposition of the received signals (shift register processing includes providing superposition of different received signals from different mobile stations, see col. 9, lines 20-67).

Regarding claim 6, Fukasawa discloses a CI transmission system including:

a carrier-signal generator (carrier generator 123, see Fig. 2) capable of generating a plurality of carrier signals (in-phase carrier and quadrature carrier signals generated, see col. 6, lines 31-67),

a modulator (product modulator 124-I and 124-Q, see Fig. 2) capable of redundantly modulating at least one information signal onto a plurality of the carrier signals (spread signal $dk_I(t)$ is modulated with in-phase carrier and spread signal $dk_Q(t)$is modulated with quadrature carrier, see col. 6, lines 31-67) wherein the improvement comprises at least one of the carrier-signal generator (carrier generator 123, see Fig. 2) and the modulator being adapted to provide

the modulated carrier signals with an incremental phase relationship (in-phase carrier is orthogonal to quadrature carrier signal, see col. 6, lines 31-67) that facilitates separation of multiple information signals modulated onto the same carrier signals by orthogonally positioning data-modulated pulse waveform produced from a superposition of the carrier signals (in-phase carrier is orthogonal to quadrature carrier signal, see col. 6, lines 31-67), and

a transmitter (a combined system of combiner and multiplexer, see Fig. 7A) having at least one transmitter element (a combiner, see col. 6, lines 31-67), the transmitter being capable of coupling the modulated carrier signals into at least one communication channel (a combiner combines the modulated carrier signals to create a transmit signal, see col. 6, lines 38-52).

Regarding claim 7, Fukasawa discloses the CI transmission system recited in claim 6 wherein the carrier-signal generator (carrier generator 123, see Fig. 2) is adapted to generate carrier signals that are each distinguished by different values of at least one diversity parameter (carrier signals are orthogonal to each other, see col. 6, lines 31-67).

Regarding claim 8, Fukasawa discloses the CI transmission system recited in claim 6 wherein at least one of the carrier-signal generator (carrier generator 123, see Fig. 2), the modulator, and the transmitter includes a spatial processor adapted to effect spatial processing of at least one of the modulated carrier signals (carrier generator 123 generates two mutually orthogonal carrier signals which are modulated by spread signals $dk_I(t)$ and $dk_Q(t)$, respectively, see col. 6, lines 31-67).

Regarding claim 9, Fukasawa discloses a CI transmission system including:

a carrier-signal generator (carrier generator 123, see Fig. 2) capable of generating at least one carrier signal (in-phase carrier and quadrature carrier signals generated, see col. 6, lines 31-67),

a modulator (product modulator 124-I and 124-Q, see Fig. 2) capable of redundantly modulating at least one information signal onto a plurality of the carrier signal(s) (spread signal $dk_I(t)$ is modulated with in-phase carrier and spread signal $dk_Q(t)$is modulated with quadrature carrier, see col. 6, lines 31-67) wherein the improvement comprises at least one of the carrier-signal generator (carrier generator 123, see Fig. 2) and the modulator being adapted to provide the modulated carrier signal(s) with an incremental phase relationship (in-phase carrier is orthogonal to quadrature carrier signal, see col. 6, lines 31-67) that facilitates separation of multiple information signals modulated onto the same carrier signals by orthogonally positioning data-modulated pulse waveform produced from a superposition of the carrier signals (in-phase carrier is orthogonal to quadrature carrier signal, see col. 6, lines 31-67), and

a transmitter (a combined system of combiner and multiplexer, see Fig. 7A) having at least one transmitter element (a combiner, see col. 6, lines 31-67), the transmitter being capable of coupling the modulated carrier signals into at least one communication channel (a combiner combines the modulated carrier signals to create a transmit signal, see col. 6, lines 38-52).

Regarding claim 10, Fukasawa discloses the CI transmission system recited in claim 9 wherein the carrier-signal generator (carrier generator 123, see Fig. 2) is capable of generating carrier signals that are each distinguished by different values of at least one diversity parameter (carrier signals are orthogonal to each other, see col. 6, lines 31-67).

Regarding claim 11, Fukasawa discloses the CI transmission system recited in claim 9 wherein at least one of the carrier-signal generator (carrier generator 123, see Fig. 2), the modulator, and the transmitter includes a spatial processor adapted to effect spatial processing of at least one of the modulated carrier signals (carrier generator 123 generates two mutually orthogonal carrier signals which are modulated by spread signals $dk_I(t)$ and $dk_Q(t)$, respectively, see col. 6, lines 31-67).

Regarding claim 12, Fukasawa discloses a CI receiver system including:

a receiver (transceiver 205, see Fig,. 3) having at least one receiver element (see Fig. 3), the receiver adapted to be responsive to a plurality of information-modulated carrier signals from at least one communication channel (receives a plurality of modulated carrier signals, see Fig. 3) to generate a plurality of received modulated carrier signals (demodulator extracts symbols transmitted from a received signal), and

a combiner coupled to the receiver, the combiner capable of combining the received modulated carrier signals to separate at least one desired information symbol from at least one interfering signal (interference canceler, see Fig. 3), and

a multi-channel detector adapted to separate at least one desired signal from at least one interfering signal (interference canceler is coupled to the demodulator and is capable of canceling interference between different mobile stations, see col. 5, lines 49-62 and col. 9, lines 20-67 and col. 11, lines 1-67).

Regarding claims 13-15, Fukasawa discloses the CI receiver system recited in claim 12 wherein at least one of the receiver and the combiner (interference canceler, see col. 5, lines 49-62 and col. 9, lines 20-67 and col. 11, lines 1-67) includes a spatial processor adapted to effect spatial processing of at least one of the received modulated carrier signals (interference canceler is coupled to the demodulator and has the means for canceling interference between different mobile stations, see col. 5, lines 49-62 and col. 9, lines 20-67 and col. 11, lines 1-67).

Regarding claim 16, Fukasawa discloses a CI receiver system including:

a receiver (transceiver 205, see Fig,. 3) having at least one receiver element (see Fig. 3), the receiver adapted to be responsive to a plurality of information-modulated carrier signals from at least one communication channel (receives a plurality of modulated carrier signals, see Fig. 3) to generate a plurality of received modulated carrier signals (demodulator extracts symbols transmitted from a received signal), and

a combiner coupled to the receiver, the combiner capable of combining the received modulated carrier signals to separate at least one desired information symbol from at least one interfering signal (interference canceler is coupled to the demodulator and is capable of combining different signals from different mobile stations and canceling interference between

different mobile stations, see col. 5, lines 49-62 and col. 9, lines 20-67 and col. 11, lines 1-67), and

a multi-channel detector adapted to separate at least one desired signal from at least one interfering signal (interference canceler is coupled to the demodulator and is capable of canceling interference between different mobile stations, see col. 5, lines 49-62 and col. 9, lines 20-67 and col. 11, lines 1-67).

Regarding claim 17, Fukasawa discloses the CI receiver system recited in claim 16 wherein at least one of the receiver and the multi-channel detector (interference canceler, see col. 5, lines 49-62 and col. 9, lines 20-67 and col. 11, lines 1-67) includes a spatial processor adapted to effect spatial processing of at least one of the received modulated carrier signals (interference canceler is coupled to the demodulator and has the means for canceling interference between different mobile stations, see col. 5, lines 49-62 and col. 9, lines 20-67 and col. 11, lines 1-67).

Response to Arguments

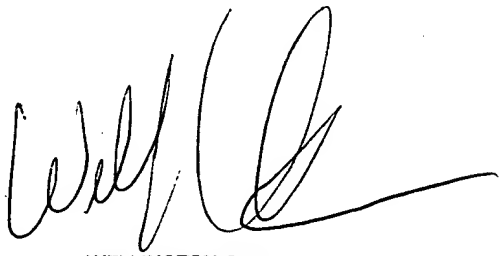
3. Applicant's arguments with respect to claims 1-17 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kevin Mew whose telephone number is 703-305-5300. The examiner can normally be reached on 9:00 am - 5:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wellington Chin can be reached on 703-305-4366. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



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